

# Distance sensor VDM28-8-L1-8954



- Distance measurement using object
- Measuring method PRT (Pulse Ranging Technology)
- Accurate, clear, and reproducible measuring results
- Minimal black-white difference
- Red laser as the light emitter
- Version with laser class 1

Universal distance sensor, measurement to object, measuring method PRT, 8 m detection range, red laser light, laser class 1, push-pull output, M12 plug









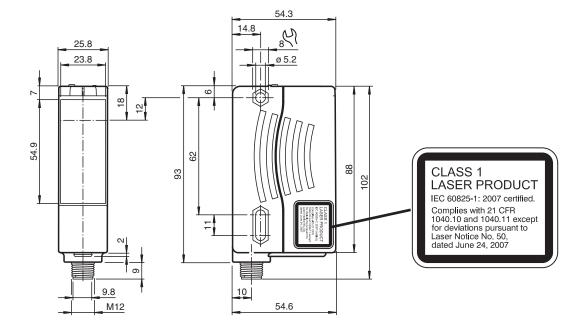


#### **Function**

The VDM28 distance measurement device employs Pulse Ranging Technology (PRT). It has a repeat accuracy of 5 mm with an operating range of 0.2 ... 50 m and an absolute accuracy of 25 mm.

The compact housing of the Series 28 photoelectric sensors, with dimensions of 88 mm (height), 26 mm (width) and 54 mm (depth), make it the smallest device available in its class.

#### **Dimensions**



#### **Technical Data**

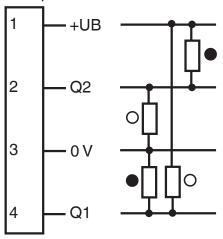
| General specifications |   |  |  |  |
|------------------------|---|--|--|--|
| Object distance        | Q1: < 60 mm; Q2: 500 1900 mm                          |  |  |  |
| Reference target       | Kodak white (90%)                                     |  |  |  |
| Light source           | laser diode typ. service life 85,000 h at Ta = +25 °C |  |  |  |

| MTFG         200 a           Mission Time (Tw)         10 a           Diagnostic Coverage (DC)         0 %           Indicators/operating means         LED green           Operation indicator         2 LEDs yellow for switching state           Control elements         deactivated           Electrical specifications         Us         10 30 V DC, class 2           Ripple         10 % within the supply tolerance           No-load supply current         10 s 125 mA /24 V DC           Time delay before availability         1 s 15 s           Output type         PNP normally closed           Switching type         PNP normally closed           Switching voltage         max. 30 V DC           Switching unrent         max. 30 V DC           Switching grequency         f 50 Hz           Switching frequency         f 50 Hz           Besponse time         lo ms           Conformity         EC60825-1:2007           Measurement accuracy         ± 25 mm           Approvals and certificates         ≤ 5 mm           Approvals and certificates         ≤ 5 mm           Approvals and certificates         ≤ CC approval / marking not requise in the closure of the country of th  | Technical Data                       |                |   |
|--|--------------------------------------|----------------|---|
| Laser nominal ratings  | Light type                           |                | modulated visible red light   |
| Note   Laser class   | • ,,                                 |                |   |
| Laser class   1   680 nm                                 | · ·                                  |                | LASER LIGHT , DO NOT STARE INTO BEAM  |
| Pulse length   | Laser class                          |                |   |
| Beam divergence  | Wave length                          |                | 660 nm  |
| Pulse length   | -                                    |                | < 1.5 mrad  |
| Repetition rate  | -                                    |                | approx. 4 ns  |
| Angle deviation         max. ± 2°           Measuring method         Pulse Ranging Technology (PRT)           Diameter of the light spot         < 10 mm at a distance of 8 m at 20 °C   | -                                    |                | 250 kHz   |
| Angle deviation         max. ± 2°           Measuring method         Pulse Ranging Technology (PRT)           Diameter of the light spot         < 10 mm at a distance of 8 m at 20 °C   | max. pulse energy                    |                | <1.5 nJ   |
| Diameter of the light spot   |                                      |                | max. ± 2°   |
| Ambient light limit         50000 Lux           Temperature influence         typ. 5.25 mm/K           Functional safety related parameters         Functional safety related parameters           MTTFa         200 a           Mission Time (Tu)         10 a           Disagnostic Coverage (DC)         0 %           Indicators/operating means         LED green           Operation indicator         2 LEDs yellow for switching state           Control elements         deactivated           Electrical specifications         Operating you Lip (See See See See See See See See See Se  | Measuring method                     |                | Pulse Ranging Technology (PRT)  |
| Temperature influence   typ. ≤ 0.25 mm/K  Functional safety related parameters    Mission Time (T <sub>M</sub> )   | Diameter of the light spot           |                | < 10 mm at a distance of 8 m at 20 °C   |
| Functional safety related parameters  MTTF <sub>2</sub> 200 a Mission Time (T <sub>10</sub> )   0 10 a Diagnostic Coverage (DC) 0 % Indicators/operating means  Operation indicator   2 LED green Function indicator   2 LEDs yellow for switching state Control elements   deactivated  Electrical specifications  Operating voltage   U <sub>B</sub> 10 30 V DC , class 2 Fipple   10 % within the supply tolerance No-load supply current   15 ≤ 125 mA / 24 V DC Time delay before availability   1, 1.5 s  Output type   PNP normally closed  Switching type  Signal output   2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected Switching current   10 max. 30 V DC Switching current   10 max. 30 V DC Switching current   10 max. 30 V DC Switching frequency   f 50 Hz Response time   10 max  Conformity  Electromagnetic compatibility   Electromagnetic compatibility   Electromagnetic compatibility   Electromagnetic correct accuracy   ± 25 mm  Repeat | Ambient light limit                  |                | 50000 Lux   |
| Functional safety related parameters  MITF <sub>6</sub> 200 a  Mission Time (Ty) 10 a  Diagnostic Coverage (DC) 0%  Indicators/operating means  Operation indicator 2 LED green  Function indicator 3 2 LEDs yellow for switching state  Control elements 4 deactivated  Electrical specifications  Operating yoltage 0, 10 % within the supply tolerance  No-load supply current 15 ≤ 125 mA / 24 V DC  Time delay before availability 1, 15 s  Output 1ype 1 PNP normally closed  Switching type  Switching yoltage 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected  Switching current 5 ob Hz  Switching current 1 max. 30 V DC  Switching current 1 max. 30 V DC  Switching current 1 max. 30 V DC  Switching frequency 6 so Hz  Electromagnetic compatibility 1 be 10 ms  Conformity  Electromagnetic compatibility 2 EC 60825-1:2007  Measurement accuracy  Absolute accuracy 2 ± 25 mm  Repeat accuracy 4 ± 25 mm  Repeat accuracy 4 ± 25 mm  Repeat accuracy 5 cm m  Approvals and certificates  Protection class III  UL approval 5 CCC approval / marking not required for products rated ≤ 36 V  EDC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient conditions  Laser safely 5 CC2 2 m. 131 °F)  Storage lemperature 5 30 5° °C (22 131 °F)  Storage lemperature 5 cproduction 1 left?   | Temperature influence                |                | typ. ≤ 0.25 mm/K  |
| MTTF <sub>d</sub> 200 a Mission Time (T <sub>hi</sub> )   10 a Mission Time (T <sub>hi</sub> )   0 %  Indicators/operating means  Operation indicator  | Functional safety related parameters |                |   |
| Diagnostic Coverage (DC)   |                                      |                | 200 a   |
| Diagnostic Coverage (DC)   | Mission Time (T <sub>M</sub> )       |                | 10 a  |
| Operation indicator         LED green           Function indicator         2 LEDs yellow for switching state           Control elements         deactivated           Electrical specifications         To a supply current           Operating voltage         Us 10 30 V DC , class 2           Ripple         10 within the supply tolerance           No-load supply current         Inguity 5 mA / 24 V DC           Time delay before availability         Ity 1.5 s           Output         PNP normally closed           Switching type         PNP normally closed           Switching type         PNP normally closed           Switching output         2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected           Switching outgae         max. 30 V DC           Switching outgae         max. 100 mA           Switching frequency         f 50 Hz           Response time         10 ms           Conformity         Electromagnetic compatibility         EN 61000-6-2, EN 61000-6-4           Laser safety         CC 60825-1:2007           Repeat accuracy         5 m   |                                      |                | 0%  |
| Operation indicator         LED green           Function indicator         2 LEDs yellow for switching state           Control elements         deactivated           Electrical specifications         To a supply current           Operating voltage         Us 10 30 V DC , class 2           Ripple         10 within the supply tolerance           No-load supply current         Inguity 5 mA / 24 V DC           Time delay before availability         Ity 1.5 s           Output         PNP normally closed           Switching type         PNP normally closed           Switching type         PNP normally closed           Switching output         2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected           Switching outgae         max. 30 V DC           Switching outgae         max. 100 mA           Switching frequency         f 50 Hz           Response time         10 ms           Conformity         Electromagnetic compatibility         EN 61000-6-2, EN 61000-6-4           Laser safety         CC 60825-1:2007           Repeat accuracy         5 m   | Indicators/operating means           |                |   |
| Function indicator   | -                                    |                | LED green   |
| Control elements         deactivated           Electrical specifications         Up 1030 V DC, class 2           Ripple         10 % within the supply tolerance           No-load supply current         I <sub>0</sub> ≤ 125 mA/24 V DC           Time delay before availability         t <sub>v</sub> 1.5 s           Output         Output type         PNP normally closed           Switching type         Switching voltage         PNP normally closed           Switching current         max. 30 V DC           Switching frequency         f 50 Hz           Response time         10 ms           Conformity         EN 61000-6-2, EN 61000-6-4           Laser safety         EEC 60825-1:2007           Measurement accuracy         ± 25 mm           Repeat accuracy         ± 25 mm           Approvals and certificates         III           U capproval         cULus Listed, Class 2 Power Source, Type 1 enclosure         CCC approval / marking not required for products rated ≤36 V           FDA approval         EC 60825-1:2007 Complies with 21 CFR 1040-10 and 1040-11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007           Ambient conditions   |                                      |                |   |
| Operating voltage         U <sub>B</sub> 10 30 V DC , class 2           Ripple         10 % within the supply tolerance           No-load supply current         I <sub>0</sub> ≤ 125 mA /24 V DC           Time delay before availability         I <sub>v</sub> 1.5 s                  Output type         9 PNP normally closed           Switching type         2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected           Switching voltage         max. 30 V DC           Switching frequency         f         50 Hz           Response time         10 ms         60 Hz            10 ms         10 ms            2 ms hours         10 ms            2 ms hours         10 ms            2 ms hours         10 ms   | Control elements                     |                | -   |
| Operating voltage         U <sub>B</sub> 10 30 V DC , class 2           Ripple         10 % within the supply tolerance           No-load supply current         I <sub>0</sub> ≤ 125 mA /24 V DC           Time delay before availability         I <sub>v</sub> 1.5 s                  Output type         9 PNP normally closed           Switching type         2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected           Switching voltage         max. 30 V DC           Switching frequency         f         50 Hz           Response time         10 ms         60 Hz            10 ms         10 ms            2 ms hours         10 ms            2 ms hours         10 ms            2 ms hours         10 ms   | Electrical specifications            |                |   |
| Ripple         10 % within the supply tolerance           No-load supply current         1₀ ≤ 125 mA / 24 V DC           Time delay before availability         t, 1.5 s           Output         Tourned belay before availability           Output type         PNP normally closed           Switching type         Switching type           Signal output         2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected           Switching voltage         max. 30 V DC           Switching frequency         f         50 Hz           Response time         10 ms         10 ms           Conformity         IEC 60825-1:2007           Laser safety         IEC 60825-1:2007           Measurement accuracy         ± 25 mm           Repeat accuracy         ± 25 mm           Repeat accuracy         ± 25 mm           Approvals and certificates         III           UL approval         cULus Listed, Class 2 Power Source, Type 1 enclosure           CCC approval         in Ce 60825-1:2007 Complies with 21 CFR 1040, 10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007           Ambient conditions         IEC 60825-1:2007 Complies with 21 CFR 1040, 10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007           Ambient temperature         -3   | ·                                    | $U_B$          | 10 30 V DC , class 2  |
| No-load supply current   |                                      |                |   |
| Time delay before availability t, 1.5 s  Output  Output type PNP normally closed  Switching type  Signal output 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected Switching voltage max. 30 V DC Switching voltage max. 30 V DC Switching frequency f 50 Hz Response time 10 ms  Conformity  Electromagnetic compatibility EN 61000-6-2, EN 61000-6-4 Laser safety IEC 60825-1:2007  Measurement accuracy ±25 mm  Absolute accuracy ±25 mm  Repeat accuracy ±25 mm  Approvals and certificates  Protection class III UL approval CCC approval / marking not required for products rated ≤36 V  EDA approval Supproval Suppr                            |                                      | I <sub>0</sub> | 1.1.1   |
| Output type  Output type  Switching type  Signal output  Signal output  Switching voltage  max. 30 V DC  witching current  max. 100 mA  Switching frequency  f 50 Hz  Response time  Conformity  Electromagnetic compatibility  Laser safety  Absolute accuracy  Approvals and certificates  Protection class  UL approval  UL approval  CCC approval  CCC approval  Ambient conditions  Ambient conditions  Ambient temperature  Abgrave of protection  Mechanical specifications  Mechanical specifications  Mechanical specifications  Mechanical specifications  Mechanical specifications  PNP normally closed  max. 30 V DC  max. 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 30 V DC  max. 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 30 V DC  max. 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 100 mA  Max. 100 mA  Spubled, sin 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 100 mA  Spubled, sin 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 100 mA  Spubled, sin 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 100 mA  Spubled, sin 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 100 mA  Spubled, sin 10 outputs, short-circuit protected, reverse polarity protected  max. 30 V DC  max. 100 mA  Spubled, sin 10 outputs, short-circuit protected, source polarity protected.  Switching output sust, 100 mA  Spubled, sin 10 outputs  max. 40 output sust, 10 output sust,                           |                                      |                | 1.5 s   |
| Output type Switching type  Signal output Signal output Switching voltage max. 30 V DC max. 100 mA Switching current max. 100 mA Switching frequency f 50 Hz Response time Conformity Laser safety Laser safety Laser safety Separate accuracy Absolute accuracy Approvals and certificates Protection class UL approval CCC approval DL approval CCC approval Ambient conditions Ambient temperature Storage temperature CCC approtection Separate CCC approval CCC approtection Separate CCC approtection Separate CCC approval CCC 2 131 °F) Storage temperature CCC approtection Separate CCC 2 131 °F) Storage temperature Separate CCC approtection Separate CCCC approtection Separate CCCC approtection Separate CCCC approtectio                                  | Output                               |                |   |
| Signal output 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected  Switching voltage max. 30 V DC  Switching current max. 100 mA  Switching frequency f 50 Hz  Response time 10 ms  Conformity  Electromagnetic compatibility EN 61000-6-2, EN 61000-6-4  Laser safety EC 60825-1:2007  Measurement accuracy  Absolute accuracy ± 25 mm  Repeat accuracy ≤ 5 mm  Approvals and certificates  Protection class III  UL approval cULus Listed, Class 2 Power Source, Type 1 enclosure  CCC approval proval prusant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient conditions  Ambient temperature -30 55 °C (-22 158 °F)  Mechanical specifications  Degree of protection III P67  |                                      |                | PNP normally closed   |
| Switching voltage max. 30 V DC Switching current max. 100 mA  Switching frequency f 50 Hz  Response time 10 ms  Conformity  Electromagnetic compatibility EN 61000-6-2, EN 61000-6-4 Laser safety IEC 60825-1:2007  Measurement accuracy Absolute accuracy ±25 mm Repeat accuracy +5 mm  Approvals and certificates  Protection class III UL approval CCC approval CCC approval marking not required for products rated ≤36 V FDA approval CCC approval marking not required for products rated ≤36 V FDA approval CCC approval marking not required for products rated ≤36 V FDA approval Scccccccccccccccccccccccccccccccccccc   |                                      |                |   |
| Switching currentmax. 100 mASwitching frequencyf50 HzResponse time10 msConformityElectromagnetic compatibilityEN 61000-6-2, EN 61000-6-4Laser safetyIEC 60825-1:2007Measurement accuracyAbsolute accuracy± 25 mmRepeat accuracy< 5 mm  | Signal output                        |                | 2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected |
| Switching frequency f 50 Hz   Response time 10 ms   Conformity   Electromagnetic compatibility EN 61000-6-2, EN 61000-6-4   Laser safety IEC 60825-1:2007   Measurement accuracy   Absolute accuracy ± 25 mm   Repeat accuracy < 5 mm  | Switching voltage                    |                | max. 30 V DC  |
| Response time         10 ms           Conformity         Electromagnetic compatibility         EN 61000-6-2, EN 61000-6-4           Laser safety         IEC 60825-1:2007           Measurement accuracy         ± 25 mm           Absolute accuracy         ± 25 mm           Repeat accuracy         < 5 mm  | Switching current                    |                | max. 100 mA   |
| Electromagnetic compatibility EN 61000-6-2, EN 61000-6-4  Laser safety IEC 60825-1:2007  Measurement accuracy  Absolute accuracy ± 25 mm  Repeat accuracy < 5 mm  Approvals and certificates  Protection class III  Laproval cULus Listed, Class 2 Power Source, Type 1 enclosure  CCC approval CCC approval PEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient temperature -30 55 °C (-22 131 °F)  Storage temperature -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection IP67  | Switching frequency                  | f              | 50 Hz   |
| Electromagnetic compatibility  Laser safety  IEC 60825-1:2007  Measurement accuracy  Absolute accuracy  Approvals and certificates  Protection class  UL approval  CCC approval  CCC approval  CCC approval  EDG 60825-1:2007  Ambient conditions  Ambient temperature  Ambient temperature  Degree of protection  EN 61000-6-2, EN 61000-6-4  IEC 60825-1:2007  IEC 60825-1:2007  III  CULus Listed, Class 2 Power Source, Type 1 enclosure  CCC approval / marking not required for products rated ≤36 V  IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  Mechanical specifications  Degree of protection  IP67  | Response time                        |                | 10 ms   |
| Laser safety IEC 60825-1:2007   Measurement accuracy ± 25 mm   Absolute accuracy < 5 mm  | Conformity                           |                |   |
| Measurement accuracy Absolute accuracy   | Electromagnetic compatibility        |                | EN 61000-6-2, EN 61000-6-4  |
| Absolute accuracy ± 25 mm  Repeat accuracy < 5 mm  Approvals and certificates  Protection class III  UL approval cULus Listed, Class 2 Power Source, Type 1 enclosure  CCC approval CCC approval parking not required for products rated ≤36 V  FDA approval EC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient temperature -30 55 °C (-22 131 °F)  Storage temperature -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection IP67   | Laser safety                         |                | IEC 60825-1:2007  |
| Repeat accuracy   <5 mm  | Measurement accuracy                 |                |   |
| Approvals and certificates  Protection class  UL approval  CCC approval  CCC approval  CCC approval  FDA approval  Ambient conditions  Ambient temperature  C30 55 °C (-22 131 °F)  Storage temperature  Degree of protection  III  CCC approval / Marking not required for products rated ≤36 V  IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  -30 55 °C (-22 131 °F)  Storage temperature  -30 70 °C (-22 158 °F)  IP67  | Absolute accuracy                    |                | ± 25 mm   |
| Protection class  UL approval  CCC approval  CCC approval / marking not required for products rated ≤36 V  FDA approval  EC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient temperature  -30 55 °C (-22 131 °F)  Storage temperature  -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection  IP67  | Repeat accuracy                      |                | < 5 mm  |
| UL approval       cULus Listed, Class 2 Power Source, Type 1 enclosure         CCC approval       CCC approval / marking not required for products rated ≤36 V         FDA approval       IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007         Ambient conditions       -30 55 °C (-22 131 °F)         Storage temperature       -30 70 °C (-22 158 °F)         Mechanical specifications       Degree of protection         IP67  | Approvals and certificates           |                |   |
| CCC approval CCC approval / marking not required for products rated ≤36 V  FDA approval IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient temperature -30 55 °C (-22 131 °F)  Storage temperature -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection IP67   | Protection class                     |                | III   |
| FDA approval  IEC 60825-1:2007 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient temperature  -30 55 °C (-22 131 °F)  Storage temperature  -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection  IP67  | UL approval                          |                | cULus Listed, Class 2 Power Source, Type 1 enclosure                              |
| pursuant to Laser Notice No. 50, dated June 24, 2007  Ambient conditions  Ambient temperature -30 55 °C (-22 131 °F)  Storage temperature -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection IP67   | CCC approval                         |                | CCC approval / marking not required for products rated ≤36 V                      |
| Ambient temperature -30 55 °C (-22 131 °F) Storage temperature -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection  IP67   | FDA approval                         |                |   |
| Storage temperature -30 70 °C (-22 158 °F)  Mechanical specifications  Degree of protection IP67   | Ambient conditions                   |                |   |
| Mechanical specifications  Degree of protection IP67   | Ambient temperature                  |                | -30 55 °C (-22 131 °F)  |
| Degree of protection IP67  | Storage temperature                  |                | -30 70 °C (-22 158 °F)  |
|  | Mechanical specifications            |                |   |
| Connection 4-pin, M12 x 1 connector  | Degree of protection                 |                | IP67  |
|  | Connection                           |                | 4-pin, M12 x 1 connector  |

| Material     |             |
|--------------|-------------|
| Housing      | Plastic ABS |
| Optical face | PMMA        |
| Mass         | 90 g        |
| Dimensions   |             |
| Height       | 88 mm       |
| Width        | 25.8 mm     |
| Depth        | 54.6 mm     |
|              |             |

## **Connection Assignment**

Option:



- O = Light on
- = Dark on

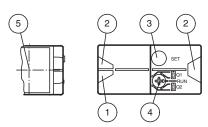
## **Connection Assignment**



Wire colors in accordance with EN 60947-5-2

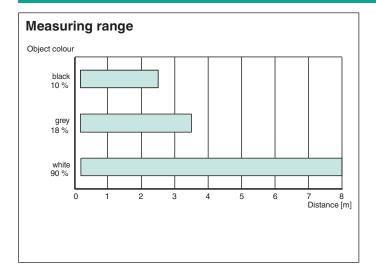
| 1 | BN | (brown) |
|---|----|---------|
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

### **Assembly**



| 1 | Operating display  | green  |
|---|--------------------|--------|
| 2 | Signal display     | yellow |
| 3 | TEACH-IN button    |        |
| 4 | Mode rotary switch |        |
| 5 | Laser output       |        |

#### **Characteristic Curve**



## **Application**



## **Safety Information**

## CLASS 1 LASER PRODUCT

IEC 60825-1: 2007 certified. Complies with 21 CFR

1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

## **Safety Information**

Laser Class 1 Information
The irradiation can lead to irritation especially in a dark environment. Do not point at people!
Maintenance and repairs should only be carried out by authorized service personnel!
Attach the device so that the warning is clearly visible and readable.
Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation

exposure.

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